OFFICE OF TECHNOLOGY COMMERCIALIZATION DIVISION OF RESEARCH & SCHOLARLY ACTIVITIES PURDUE RESEARCH FOUNDATION - PURDUE UNIVERSITY 64281

INVENTION RECORD AND DISCLOSURE CONFIDENTIAL

NOTE: This form requires the signatures of: Department Head(s) and School Dean(s). Please complete the attached form and then route to Department Head(s), Dean(s) and then back to the Office of Technology Commercialization (OTC), 1291 Cumberland Avenue, Suite F, West Lafayette, IN 47906 (Note: Please feel free to add additional attachments to elaborate on any questions, or to call the Office of Technology Commercialization at 42610 for assistance).

I. Formal Record of Disclosure

Please identify by name, phone number, department and building, each individual who contributed to development of the proposed invention <u>and</u> who will share in any net proceeds from the proposed invention. Please note that individuals listed here <u>may or may not</u> qualify as legal inventors for patent applications. Type the name and campus address of your department (school) head and school dean and <u>obtain signatures.</u>

B. Disclosure Date: 12-19-04 C. Full legal names (including middle name) and titles of inventor/submitter(s) (Please print: Prof/Dr/Mr/Ms, followed by full legal name. Title Name (19-18-18-1) Phone No. Department ECE & BNC ECE & BNC D. Disclosure must be reviewed and approved by Submitter's Department Head and Dean Department Head(s) MARK J. T. SMITH, ECE Date Othor/or/or	A. Disclosure Title: OPTIMIZED VERTICAL POWER DINDSFETS IN SINCE	ON CARBIDE
Title Name (ABERT) Phone No. Phone N		
MARK J.T. SMITH, ECE (b) (6) Comments:	Title Name (*ALBERT) PROF. JAMES A. COOPER JR (b) (6) ECE & RNC	Building
MARK J.T. SMITH, ECE (b) (6) Comments:		
	Department Head(s) Signature	<u>Date</u> 01/03/05
Dean(s) of School Date 01/07/05	Comments:	
	Dean(s) of School (5)	<u>Date</u> 01/07/05
Comments:	Comments:	

II. Sponsorship

Please specify the source of funds that were used in the research that led to the technology, including contract number from which salaries and other project costs were paid, which resulted in the disclosure. This information is critical for correct identification of sponsors and meeting obligations to them.

A. Government Agency/Address: DARPH / MTO 3701 NORTH FAIRFAX DRIVE YSSTINGLON! MY 93903-1114

B. Name of department, industry, foundation or other sponsor/Address:

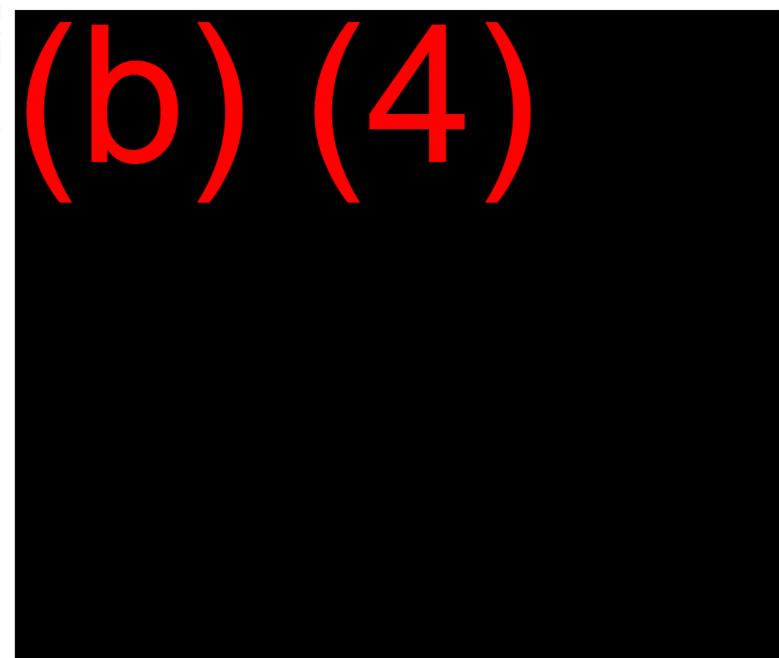
N00014-03-1-0628

Contract/Grant #:

DEVELOPMENT OF PROCESS Grant/Contract Title: TECHNOLOGIES FOR HIGH-

Contract/Grant #: Grant/Contract Title: PERFORMANCE MUS-BASED SIC POWER SWITCHING DEVICES

C. Has the invention been disclosed to industry representatives? If "yes" please provide details, including names of No



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VIII. Marketing Summary of the Invention (Non-confidential/Non-Technical Information)

Please summarize the invention in terms such that its value can be understood by a potential licensee. This summary will be used for distribution to companies to determine commercial interest in the proposed invention. Please provide a one paragraph concise description. This summary must not allow one skilled in the art to practice the proposed invention.

a structure and method of fabrication of vertical DMOS power transistors in silicon carbide to achieve close to the minimum theoretical on-state resistorce at a given blocking voltage.

IX. Technology Classification

LIFE SCIENCE / BIOTECHNOLOGY	INFORMATION SCIENCE
Animals	
Biomedical (Specify)	Computer Hardware (Specify) Mainframe
Diagnostic	
Therapeutic	UNIX
☐ Dental	☐ PC
Foods and Nutrition	Computer Software
Health Sciences	Telecommunications
Medical Devices (Specify)	Other (Specify)
Diagnostic	
Therapeutic	EDUCATIONAL MATERIAL
Pharmaceutical (Specify)	Printed and/or Artwork Material
Diagnostic	Software
	Videos
Therapeutic Plants	Multimedia
	Other (Specify)
Other (Specify)	OTHER (Specify)
PHYSICAL SCIENCE Automotive Engineering	
Chemical Science/Chemical Engineering	
Construction, related	
X Electronics	
Energy	
Fluid Mechanics	
Manufacturing	
Materials	
Mechanical Engineering/Devices	
Separations	
Transportation	
Waste Treatment	
Other (Specify)	

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Important Note: In order for you to continue receiving royalties for the life of the patent, we must have your forwarding address each time you move. Please keep us updated by sending forwarding address information to: Disclosure Coordinator Office of Technology Commercialization 1291 Cumberland Avenue, Suite F West Lafayette IN 47906 If you have any questions, please call 765/494-2610.

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		Middle Initial	Last Name
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(b) (6)	_	Home Phon	ne Number
Work Fax Number		E-Mail Add	rie purdvecedu
I(b) (6)		(b) (6)	11 C55
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MS. ASMITA Title First Name		liddle Initial	SANA Last Name
465 NORTHWESTERN	AVENUE	(b) (6	
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City, State, Zip, Country	111-1 00		Cip, Country
(b) (6)		(h) (6	
Work Phone Number		Home Phone	Number
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Work Fax Number		E-Mail Addr	@ purdue, edu
(b) (b)		(b) (6)	
Social Security Number		Citizenship	

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A. Disclosure Ti tle: <u>High - Vol</u> <u>Transist</u>	JAGE N-CH OR (IGBT)	ANNEL INSULATED IN SILICON CARBU	GMIE BIPOLAR
B. Disclosure Date: DEC, 15	, ३०० ८		
C. Full legal names (including middle name) legal name. Title Name PROF. JAMES A. COOPER, JR	Phone No	D	Ar/Ms, followed by full Building EE
MARKUN WANG	- [(D) (O) 	ECE & BAC	FE
D. <u>Disclosure must be reviewed and approve</u> Department Head(s)	<u>ed by Submitter's Depa</u> Signature()	rtment Head and Dean	
MARK J. 7. SMITH, ECE	(b) (d) V		<u>Date</u> ດາ/ບ 3/ _{ເລຽ}
Comments:			
Dean(s) of School	(b)	(6)	<u>Date</u> 0//10/65
Comments:			

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ARHIGTON, VA ARAGS - 1714
B. Name of department, industry, foundation or other

sponsor/Address:

Contract/Grant #: - N00014-02-1-0638
Grant/Contract Title: DEVELOPMENT OF PROCESS TECHNOLOGIES FOR HIGH-PERFORMANCE
Contract/Grant #: | MOS-BASED SIC PIWER MOS-BASED SIC PIWER Grant/Contract Title SWITCHING DEVICES

C. Has the invention been disclosed to industry representatives? If "yes" please provide details, including names of companies and their representatives and dates: NO



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a method and process for following high voltage (=15kV) N-channel IGBTS in silicon carbide (SiC), The procedure avoids the high resistance introduced by a P+ SiC substrate, while preserving the advantages of an N-type MOS channel.

IX. Technology Classification

LIFE SCIENCE / BIOTECHNOLOGY	INFORMATION SCIENCE
Animals	Computer Hardware (Specify)
Biomedical (Specify)	Mainframe
Diagnostic	
Therapeutic	☐ PC
Dental	Computer Software
Foods and Nutrition	Telecommunications
Health Sciences	Other (Specify)
Medical Devices (Specify)	☐ Other (Specify)
☐ Diagnostic	EDUCATIONAL MATERIAL
Therapeutic	
Pharmaceutical (Specify)	Printed and/or Artwork Material Software
Diagnostic	Videos
Therapeutic	Multimedia
Plants	Other (Specify)
Other (Specify)	OTHER (Specify)
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PHYSICAL SCIENCE	
Automotive Engineering	
Chemical Science/Chemical Engineering	
Construction, related	
Energy Energy	
Fluid Mechanics	
Manufacturing	
Materials	
Mechanical Engineering/Devices	
Separations	
Transportation	
Waste Treatment	
Other (Specify)	•

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INVENTOR/CREATOR

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(b) (6) Work Phone Number	(b) (6) Home Phone Number
Work Fax Number	coopers @ purdue, edu E-Mail Address
(b) (6) Social Security Number	(b) (6) Citizenship
INVENTOR/CREATOR	
MS, XIAOKUN Title First Name Mic	WANG Idle Initial Last Name
465 NORTHWESTERN AVENUE Work Address	I(b) (6) Permanent Home Address
WEST LAFAYETTE, IN 47907-303 City, State, Zip, Country	5](b)(6) City, State, Zip, Country
(b) (6) Work Phone Number	T(b) (6) Home Phone Number
(<mark>b) (6)</mark> Work Fax Number	(b) (6) @ purdue, edu E-Mail Address
Social Security Number	(b) (6) Citizenship

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D. Disclosure must be reviewed and approved by Submitter's Department Head and Dean Department Head(s) Mark J.J. Shiff H. CCC Comments:	CHIP WITH VERTICAL POWER TRANSISTORS
Title Name (ARSENT) Phone No. Department PROF. JAMES A. COODER, JR D. Disclosure must be reviewed and approved by Submitter's Department Head and Dean Department Head(s) MARK J. J. SHITH, ECC. Comments:	
Mark J.J. Stiller, CCC Comments:	Phone No. Department Building
Mark J.J. Stiller, CCC Comments:	
Dean(s) of School O//00/	b) (6) Date 0/05/05
Comments:	

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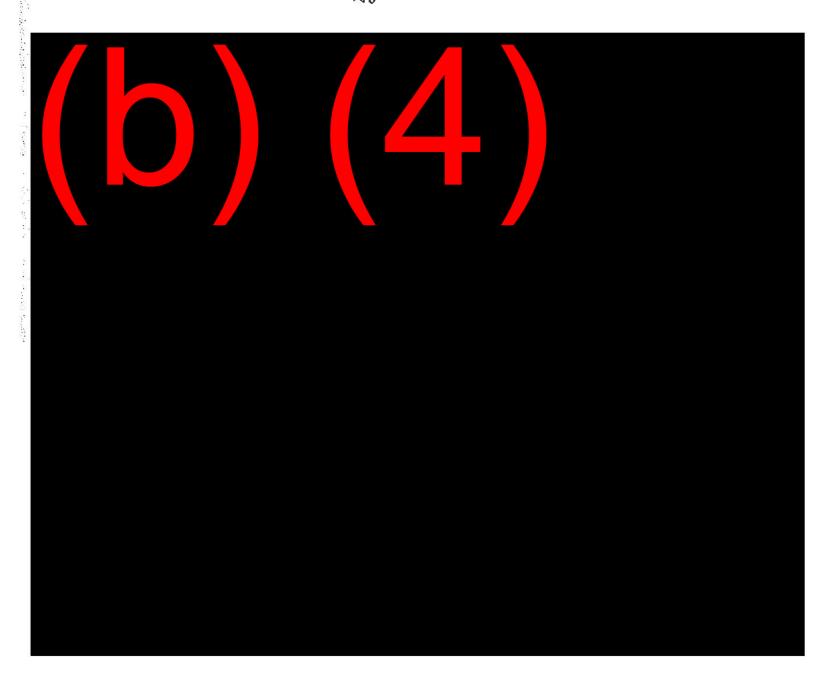
ARUNGTON, VA 28203-1714

B. Name of department, industry, foundation or other sponsor/Address:

8630-1-60-410004 Contract/Grant #: DEVELOPMENT OF PROCESS Grant/Contract Title: TEHNOLOGY ES FOR HIGH-

Contract/Grant #: Grant/Contract Title: PERFORMANCE MOS-BASED SIC POWER SWITCHING DEVICE 5

C. Has the invention been disclosed to industry representatives? If "yes" please provide details, including names of companies and their representatives and dates: NO



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This invention describes a structure and method of folication for monolithic integration of CMOS integrated circuits on the same chip with vertical DMOS power transitors for smart-power applications.

IX. Technology Classification

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17.4	LIFE SCIENCE / BIOTECHNOLOGY	INFORMATION SCIENCE
	Animals	Computer Hardware (Specify)
1	Biomedical (Specify)	Mainframe
	Diagnostic	UNIX
;	Therapeutic	□ PC
	Dental Dental	Computer Software
1	Foods and Nutrition	Telecommunications
	Health Sciences	Other (Specify)
	Medical Devices (Specify)	
1	Diagnostic	EDUCATIONAL MATERIAL
	Therapeutic	Printed and/or Artwork Material
1,000	Pharmaceutical (Specify)	Software
	Diagnostic	Videos
100	Therapeutic	Multimedia
į	Plants	Other (Specify)
	Other (Specify)	OTHER (Specify)
	PHYSICAL SCIENCE	
1	Automotive Engineering	
1	Chemical Science/Chemical Engineering	
i i	Construction, related	
	X Electronics	
	Energy	
	Fluid Mechanics	
Î	Manufacturing	
	Materials	
	Mechanical Engineering/Devices	
	Separations	
	☐ Transportation	
	Waste Treatment	6
	Other (Specify)	

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West Lafayette IN 47906

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INVENTOR/CREATOR

A.	COOPER
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(b) (6)	
City, State,	Zip, Country
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PURDUE UNIVERSITY



SCHOOL OF ELECTRICAL AND COMPUTER ENGINEERING

Date:	1-	18-05	
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TO: NAME: HILTON TURNER LOCATION: DTC	
TELEPHONE: 496-7539	FAX: 496-12-77
FROM:	
NAME: JIM COOPER	1 000
LOCATION: ECE	
TELEPHONE: (765) 494-3514	FAX: (765) 494-2706
Total number of pages (including cover):	<i>y</i>
Additional information:	•
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Hilton-As we discursed, here's the extension of cose # 64279.

